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BROWLE, DAVID				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/587,208

Applicant(s)

ONO, YASUHARU

Examiner

DAVID M. BROWNE

Art Unit

1616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2010.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3 and 5-13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1, 3, and 5-13 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SI.08)
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
5) ☐ Notice of Interval Patent Application
6) ☐ Other: _____
Paper No(s)/Mail Date: _____

DETAILED ACTION

Claims 1, 3, and 5-13 are pending; claims 2 and 4 are cancelled.

Applicants timely submission of amendments and arguments in the reply filed April 20, 2010 in response to the First Office Action on the Merits is acknowledged.

Withdrawal of Prior Objections-Specification

The abstract of the disclosure has been satisfactorily amended to limit the text to a single paragraph within the range of 50 to 150 words. Therefore, the objection presented in the First Office Action is hereby withdrawn.

Withdrawal of Prior Claim Rejections - 35 USC § 102(b)

Wong *et al.* do not explicitly disclose that their silver-based antibacterial agent dispersion comprises a silver ion-containing phosphate salt compound, as stipulated in newly amended claim 1. Therefore, the 35 USC § 102(b) rejection of claims 1 and 6-9 as being anticipated by Wong *et al.*, presented in the First Office Action, is hereby withdrawn.

Withdrawal of Prior Claim Rejections - 35 USC § 103

Neither Wong *et al.*, Pratt *et al.*, nor Niira, deceased *et al.* explicitly disclose that their respective silver-based antibacterial agents comprises a silver ion-containing phosphate salt compound and an imidazole discoloration inhibitor, as now stipulated in the newly amended and added claims. Therefore, the 35 USC § 103 rejections of claims 3 and 5, presented in the First Office Action, are hereby withdrawn. However, following

a new prior-art search and upon further consideration, a new grounds of rejection has been formulated that addresses all pending claim limitations and is presented herein below.

NEW GROUNDS OF REJECTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

I. Claims 1, 3, 6-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. (U.S. Patent No. 6,306,371), in view of Atsumi et al. (U.S. Patent No. 5,266,534) and Pratt et al. (U.S. Patent No. 4,849,223).

I. Applicant Claims

Applicant claims a silver-based inorganic antibacterial agent dispersion comprising: *a*) a silver-based inorganic antibacterial agent consisting of a silver ion-containing phosphate salt; *b*) a discoloration inhibitor; *c*) a thickener; *d*) a dispersant; *e*) a dispersion medium, wherein the silver-based inorganic antibacterial agent is 5-60 wt% of the dispersion, and the thickener is 0.1-10 wt% of the silver-based inorganic antibacterial agent. The dispersion further contains *f*) a fine particulate compound with average particle size 1-100 nm, and *g*) a binder resin. The silver ion-containing phosphate salt is a silver-supporting zirconium phosphate. The thickener is a polysaccharide and/or cellulose-based thickener. The dispersant is an anionic surfactant and/or nonionic surfactant. The fine particulate compound is an inorganic or composite oxide particle. The binder resin is an acrylic acid-based and/or a urethane-based binder resin.

Applicant further claims an antibacterial-processed product processed using the silver-based inorganic antibacterial agent dispersion.

1. Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

Wong *et al.* disclose a silver-based inorganic antibacterial agent dispersion comprising: *a*) a silver-based inorganic antibacterial agent consisting of a silver ion-containing phosphate salt; *b*) a discoloration inhibitor; *c*) a thickener; *d*) a dispersant; *e*) a dispersion medium, wherein the silver-based inorganic antibacterial agent is 5-60 wt% of the dispersion, and the thickener is 0.1-10 wt% of the silver-based inorganic antibacterial agent (Col. 1, Ins. 9-10, 65-67; Col. 2, Ins. 1-8, 16-17, 21, 30-31, 43-44, 55-60, 65-67; Col. 3, Ins. 4, 9, 47-56; Col. 4, Ins. 3-12, 28-37; Col. 5, Ins. 15-24, 29-30; Col.

6, Ins. 1-25). The dispersion further comprises a binder resin (Col. 3, Ins. 47-57; Col. 4, Ins. 11-12, 28-54; Col. 5, Ins. 25-30). The thickener is a polysaccharide and/or cellulose-based thickener (Col. 4, Ins. 3-11); and the dispersant is an anionic or nonionic surfactant (Col. 2, Ins. 65-67; Col. 3, Ins. 1-20). The binder resin is an acrylic acid-based binder resin (Col. 4, Ins. 28-37).

Wong *et al.* further disclose a product processed using the silver-based inorganic antibacterial agent dispersion (Col. 5, Ins. 15-24).

Atsumi *et al.* disclose a silver-based inorganic antibacterial agent dispersion comprising: *a*) a silver-based inorganic antibacterial agent consisting of a silver ion-containing phosphate salt; *b*) a discoloration inhibitor; and *c*) a dispersion medium (abstract, Col. 1, Ins. 7-15; Col. 2, Ins. 14-22, 34-43; Col. 3, Ins. 3-8, 42-47). The silver ion-containing phosphate salt is a silver-supporting zirconium phosphate (Col. 3, Ins. 42-47).

Pratt *et al.* disclose a silver-based inorganic antibacterial agent dispersion comprising a fine inorganic oxide particulate compound with average particle size less than 5 microns (Col. 2, Ins. 20-26, 39-41, 51, 57-65; Col. 3, Ins. 42-49; Col. 4, Ins. 33-38, 47, 54-56; Col. 5, Ins. 49-56; Col. 8, Ins. 25-32).

I. Ascertainment of the Difference Between the Scope of the Prior Art and the Claims (MPEP §2141.012)

Wong *et al.* do not explicitly disclose that the dispersion advantageously contains a silver-based inorganic antibacterial agent consisting of a silver ion-containing zirconium phosphate salt; as well as fine inorganic oxide particles with average particle

size less than 5 microns. These deficiencies are cured by the teachings of Atsumi *et al.* and Pratt *et al.*

I. Finding of Prima Facie Obviousness Rational and Motivation
(MPEP §2142-2143)

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the present invention to combine the respective teachings of Wong *et al.*, Atsumi *et al.*, and Pratt *et al.*, outlined *supra*, to arrive at applicant's claimed silver-based inorganic antibacterial agent dispersion. It is well known in the art that silver-based compounds can react with oxygen, UV light and other environmental stimuli to cause discoloration of antibacterial compositions in which they are incorporated, particularly those that also contain an anionic surfactant, substantially diminishing the attractiveness and acceptability of the product to consumers (Wong *et al.*, Col. 1, Ins. 40-49). Since Atsumi *et al.* disclose that a silver-based inorganic antibacterial agent consisting of a silver ion-containing zirconium phosphate salt is a safe and effective antibacterial agent, exhibits a high degree of whiteness, and resists discoloration to the maximum extent for prolonged periods of storage time (Col. 1, Ins. 7-15; Col. 2, Ins. 15-23; Col. 3, Ins. 42-47); one of ordinary skill in the art would be motivated to incorporate the silver ion-containing zirconium phosphate salt into the dispersion of Wong *et al.*, with the reasonable expectation that the resulting composition will successfully exhibit safe and effective antibacterial capacity and resist discoloration for extended periods of time. Further, since Pratt *et al.* disclose that addition of a fine particulate compound, such as titanium dioxide in the nanomolar range of particle size, enhances and sustains the

antimicrobial effect of silver or silver-based inorganic compounds when incorporated in certain resins or polymers, without producing any substantial adverse reactions (Col. 2, lns. 20-32, 57-63), one of ordinary skill in the art would be motivated to incorporate an additional particulate compound, such as nanomolar titanium dioxide, into the silver-based inorganic antibacterial agent dispersion, with the reasonable expectation that said additional particulate compound will successfully enhance the antibacterial effect of the silver or silver-based compound without producing any adverse reactions when administered to or contacted with a living system or tissue.

In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35 USC 103(a).

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

II. Claims 1, 5, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. (U.S. Patent No. 6,306,371), in view of Atsumi et al. (U.S. Patent No. 5,266,534), Niira, deceased et al. (U.S. Patent No. 4,938,955), and Ghosh et al. (U.S. Patent Application Pub. No. 2005/0227895).

II. Applicant Claims

Applicant claims a silver-based inorganic antibacterial agent dispersion comprising: *a*) a silver-based inorganic antibacterial agent consisting of a silver ion-containing phosphate salt; *b*) a discoloration inhibitor; *c*) a thickener; *d*) a dispersant; *e*) a dispersion medium, wherein the silver-based inorganic antibacterial agent is 5-60 wt% of the dispersion, and the thickener is 0.1-10 wt% of the silver-based inorganic antibacterial agent. The discoloration inhibitor is an imidazole series compound and/or a benzotriazole series compound.

II. Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

Wong *et al.* disclose a silver-based inorganic antibacterial agent dispersion comprising: *a*) a silver-based inorganic antibacterial agent consisting of a silver ion-containing phosphate salt; *b*) a discoloration inhibitor; *c*) a thickener; *d*) a dispersant; *e*) a dispersion medium, wherein the silver-based inorganic antibacterial agent is 5-60 wt% of the dispersion, and the thickener is 0.1-10 wt% of the silver-based inorganic antibacterial agent (Col. 1, Ins. 9-10, 65-67; Col. 2, Ins. 1-8, 16-17, 21, 30-31, 43-44, 55-60, 65-67; Col. 3, Ins. 4, 9, 47-56; Col. 4, Ins. 3-12, 28-37; Col. 5, Ins. 15-24, 29-30; Col. 6, Ins. 1-25).

Ghosh *et al.* disclose a silver-based inorganic antibacterial agent composition comprising a discoloration inhibitor; wherein the discoloration inhibitor is an imidazole series compound (Pg. 1, secs. 0001, 0004-0005, 0010-0011; Pg. 2, secs. 0027-0028; Pg. 3, secs. 0032-0033; Pg. 6, example 7).

Niira, deceased *et al.* disclose a silver-based inorganic antibacterial agent composition comprising a discoloration inhibitor; wherein the discoloration inhibitor is a benzotriazole series compound (Col. 1, Ins. 8-10, 54-57, 63-67; Col. 2, Ins. 62-66; Col. 4, Ins. 4-28; Col. 5, Ins. 21-41, 48-49).

II. Ascertainment of the Difference Between the Scope of the Prior Art and the Claims (MPEP §2141.012)

Wong *et al.* do not explicitly disclose that the discoloration inhibitor is specifically an imidazole series and/or a benzotriazole series compound. These deficiencies are cured by the teachings of Ghosh *et al.* and Niira, deceased *et al.*, who disclose, respectively, that a silver-based inorganic antibacterial composition advantageously contains an imidazole series compound and a benzotriazole series compound.

II. Finding of Prima Facie Obviousness Rational and Motivation (MPEP §2142-2143)

It would have been *prima facie* obvious for one of ordinary skill in the art at the time of the present invention to combine the respective teachings of Wong *et al.*, Ghosh *et al.*, and Niira, deceased *et al.*, outlined *supra*, to arrive at applicant's claimed silver-based inorganic antibacterial agent dispersion. It is well known in the art that silver-based compounds can react with oxygen, UV light and other environmental stimuli to cause discoloration of antibacterial compositions in which they are incorporated, particularly those that also contain an anionic surfactant, substantially diminishing the attractiveness and acceptability of the product to consumers (Wong *et al.*, Col. 1, Ins. 40-49; Niira, deceased *et al.*, Col. 1, Ins. 42-49). Since Ghosh *et al.* and Niira, deceased

et al. disclose, respectively, that imidazole and benzotriazole are effective discoloration inhibitors for silver-based inorganic antibacterial agent-containing compositions, one of ordinary skill in the art would be motivated to incorporate both imidazole and benzotriazole into the dispersion of Wong *et al.*, with the reasonable expectation that these compounds would successfully attenuate or prevent environmentally-induced discoloration of the dispersion and products made from the dispersion.

In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35 USC 103(a).

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquires

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID M. BROWE whose telephone number is 571-270-1320. The examiner can normally be reached on Monday-Friday 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DAVID M. BROWE
Patent Examiner, Art Unit 1616

/Mina Haghighatian/
Primary Examiner, Art Unit 1616